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SPECIFICATION FOR STEEL WIRE FOR SPOKES

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MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

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SPECIFICATION FOR STEEL WIRE FOR SPOKES

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Indian Standard

SPECIFICATION FOR STEEL WIRE FOR SPOKES

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 15 March 1973, after the draft finalized by the Wrought Steel Products Sectional Committee had been approved by the Structural and Metals Division Council.

0.2 This standard is based on the manufacturing and trade practices followed in the country in this field.

0.3 This standard contains clauses **2.2**, **3.1**, **8.1.1** and **A-2.1** which permit the purchaser to use his option or to agree with the manufacturer for selection to suit his requirements.

0.4 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960[*]. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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1. SCOPE

1.1 This standard covers the requirements of bare and galvanized steel wires for spokes.

2. SUPPLY OF MATERIAL

2.1 General requirements relating to supply of material shall conform to IS : 1387-1967[†].

2.2 The wire shall be supplied in the bright drawn or galvanized condition as agreed to between the purchaser and the manufacturer.

2.2.1 The galvanized coating of steel wire shall conform to the requirements for light coating of IS : 4826-1968[‡].

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[*] Rules for rounding off numerical values (*revised*).

[†] General requirements for the supply of metallurgical materials (*first revision*).

[‡] Specification for galvanized coatings on round steel wires.

3. MANUFACTURE

3.1 The wire shall be manufactured from steel made by any approved process.

4. CHEMICAL COMPOSITION

4.1 The wire when analysed in accordance with IS : 228-1959[*] shall have the chemical composition as given below:

Constituent	*Percent*
Carbon	0·35 to 0·48
Manganese	0·60 to 0·95
Phosphorus, *Max*	0·055
Sulphur, *Max*	0·055

5. TENSILE TEST

5.1 When tested in accordance with IS : 1521-1972[†] the material shall have the tensile strength of 1 000 to 1 300 N/mm^2[‡].

6. BEND TEST

6.1 The wire when tested in accordance with IS : 1716-1971[§] shall withstand without sign of failure, being bent forward and backward three times through 180° over a diameter equal to twice the wire diameter, the first bend of 90° not being counted

7. FREEDOM FROM DEFECTS

7.1 The wire shall be circular in section and free from surface defects, piping or harmful segregation. The wire shall be so processed during manufacture that it lies flat in coils of even diameter and free from cork screw effect.

8. WIRE DIAMETERS AND TOLERANCES

8.1 Steel wire for spokes shall be supplied in sizes of 1·80, 2·00, 2·35, 2·65, 3·00, 3·25, 3·50 and 4·00 mm.

8.1.1 Wires may be supplied in other sizes also as agreed to between the purchaser and the manufacturer.

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[*] Methods of chemical analysis of pig iron, cast iron and plain carbon and low-alloy steels (*revised*).

[†] Method for tensile testing of steel wire (*first revision*).

[‡] 1 N/mm^2 = 1 MN/m^2 = 0·102 0 kgf/mm^2.

[§] Method for reverse bend testing of steel wire.

8.2 Variations on the diameter of wire shall not exceed ±0·03 mm.

9. PACKING AND MARKING

9.1 Each coil of wire shall be bound and fastened compactly and shall have a tag legibly marked with the following:

a) Name of the manufacturer, and
b) Type and size of the wire.

9.2 The material may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

10. SAMPLING AND CRITERIA FOR CONFORMITY

10.1 The method of drawing representative samples of the material and the criteria for conformity shall be as prescribed in Appendix A.

APPENDIX A

(*Clause* 10.1)

SAMPLING AND CRITERIA FOR CONFORMITY

A-1. LOT

A-1.1 In any consignment, all the coils of wire of the same diameter manufactured under essentially similar conditions of manufacture shall be grouped together to constitute a lot.

A-2. SAMPLING FOR SIZE DETERMINATION AND FREEDOM FROM DEFECTS

A-2.1 The number of coils to be examined from each lot for sizes and surcondition and the corresponding criteria for conformity shall be as to between the purchaser and the manufacturer.

A-3. SAMPLING FOR OTHER CHARACTERISTICS

A-3.1 From each lot, the number of coils (depending upon the number of coils in the lot) shall be selected at random as given below:

No. of Coils in the Lot	*No. of Coils to be Selected*
2 to 8	2
9 „ 15	3
16 „ 25	5
26 „ 40	7
41 „ 65	10
66 „ 100	15
Over 100	20

A-3.2 A test piece, cut from each end of each coil so selected, shall be subjected to the chemical analysis (*see* **4**).

A-3.2.1 The lot shall be considered as conforming to the requirements of the chemical composition laid down in this specification if the average of the test results complies with the limits specified under **4**.

A-3.3 From each of the coils selected as in **A-3.1**, one test piece for each of the applicable tests given under tensile test (*see* **5.1**) and bend test (*see* **6.1**) shall be cut from each end and subjected to these tests.

A-3.3.1 The lot shall be considered as conforming to the requirements of various tests enumerated in **A-3.3**, if each test result complies with the relevant requirements specified in **5** and **6**.

A-3.3.2 In case there is only one failure in any test, then an equal number of fresh specimens shall be cut from a second set of randomly chosen coils and subjected to the tests in which the failure has occurred. On finding this new set of specimens satisfactory, the lot shall be declared as conforming to the requirements of that test, otherwise not.

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